



# **DIMP State-Federal Implementation Team Pilot and Initial Inspection Findings**



**National Association of Pipeline Safety Representatives  
Office of Pipeline Safety**



# What Principles Underlie DIMP?

- Requirements are high-level, performance-based
- DIMP requires operators to...

***Know Your System***

***Identify Threats***

***Rank and Mitigate Risks***

- DIMP does not stipulate specific assessment or mitigation actions
- Allows the regulator to investigate internal operator risk management practices



# DIMP Website

Distribution Integrity Management | Home Page



U.S. Department  
of Transportation

**DIMP Home**

**DIMP Public Meetings  
and Webcasts**

**DIMP Documents**

**DIMP Resources**

**FAQs**

**Performance  
Measures**

**Questions and  
Comments for OPS**

**Regulator Contacts**

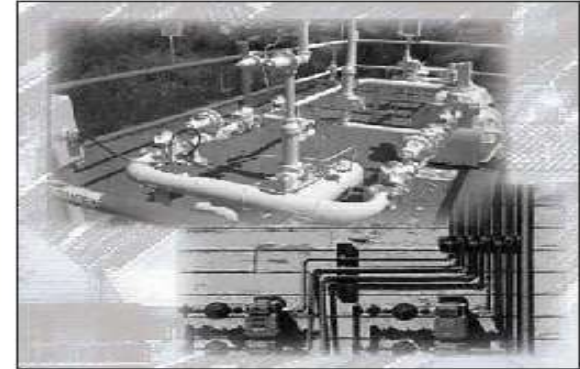
**What's New**

**Webcast**

## Distribution Integrity Management

The Pipeline and Hazardous Materials Safety Administration (PHMSA) published the final rule establishing integrity management requirements for gas distribution pipeline systems on December 4, 2009 (74 FR 63906). The effective date of the rule is February 12, 2010. Operators are given until August 2, 2011 to write and implement their program.

PHMSA previously implemented integrity management regulations for hazardous liquid and gas transmission pipelines. These regulations aim to assure pipeline integrity and improve the already admirable safety record for the transportation of energy products. Congress and other stakeholders expressed interest in understanding the nature of similarly focused requirements for gas distribution pipelines. Significant differences in system design and local conditions affecting distribution pipeline safety preclude applying the same tools and management practices as were used for transmission pipeline systems. Therefore, PHMSA took a slightly different approach for distribution integrity management, following a joint effort involving PHMSA, the gas distribution industry, representatives of the public, and the National Association of Pipeline Safety Representatives to explore potential approaches.



The regulation requires operators, such as natural gas distribution companies to develop, write, and implement a distribution integrity management program with the following elements:

- Knowledge
- Identify Threats
- Evaluate and Rank Risks
- Identify and Implement Measures to Address Risks
- Measure Performance, Monitor Results, and Evaluate Effectiveness
- Periodically Evaluate and Improve Program
- Report Results

PHMSA has developed and continues to enhance guidance to help the public and the affected industry understand the requirements of the final rule in the form of [FAQs](#).

### What's New:

- 1/26/10: [Document page](#) updated to include new content, including Final

<http://primis.phmsa.dot.gov/dimp/>[2/25/2011 10:44:32 AM]



# Topics

- Objective of DIMP Pilot Inspections
- Pilot Operator Profile
- General Observations
- Shortcomings Found in Plans
- Guidance for Operators From Pilot Inspections
- SHRIMP
- DIMP Inspection Form





# Objective of DIMP Pilot Inspections

- Test the inspection form:
  - Are the inspection questions clear?
  - How did the operator interpret the question?
  - Did the documentation the operator provided demonstrate compliance with the regulation?
  - What level of detail was provided?
- Identify if additional FAQ's are needed.
- Develop a consensus for expectations among regulators.
- Collect material for PHMSA T&Q's inspector training.



# Operator Selection Process

- Type of Plan Development Tool
  - SHRIMP
  - NGA/SGA Framework
  - MEA Preparation Aid
  - Operator Developed Plan
- Operator Characteristics
  - Size from 7,000 to 2 million customers
  - Multi-state and single state systems
- System Characteristics
  - Mix of materials (e.g. cast iron, copper, protected and unprotected/bare and coated steel, various vintages of plastic)
- Geography
  - Various states and environmental conditions (e.g. hurricanes, gophers, landslides, extreme cold/heat)



# Operators Selected

- Columbia Gas of VA – NISource – Richmond, VA
- Mid American – Des Moines, IA
- Clarke-Mobile Counties Gas District – Jackson, AL
- Avista - Spokane, WA
- NICOR - Naperville, IL
- City of Mesa, AZ



# General Observations

- Large, serious effort - began 2007 to early 2010
- Few fully dedicated DIMP personnel; many teams
- Many operators are using GPTC and SHRIMP
- Modifying commercial plan development and risk model tools
- Multi-state and State specific plans
- Change from compliance to integrity management culture
  - Forces a structured approach to prioritize work.
  - Provides “compliance leverage” for funding system integrity projects.





# General Observations

Operators are taking a deep look at data

- Modifying data collection procedures
- Improving/implementing computer applications and hardware (office and field)
- Scrubbing data
- Enhancing training on data collection
- Documenting reason for data anomalies
- Requires knowledge of the geographical relationship of data
- Using a minimum of 5-10 yrs, sometimes using much more to develop trend lines.



# General Observations

- DIMP should address system integrity issues through data analysis - Newly identified issues may require immediate action
- Substantive effort for apparent cause analysis of mechanical fitting failures (field extraction and lab analysis)
- Not many new risks have been identified; operators tended to focus on known risks rather than look for other risks
- Variety of risk models; material specific replacement models to models including all threats to system



# General Observations

- Operators have found developing the criteria for when measures to reduce risk is needed challenging
- TIMP Principles transferred to DIMP – management of change, roles and responsibilities
- Operators expressed interest in sharing of threats, risks and actions to address risk between operators



# Shortcomings Found in Plans

- Plans failed to include revision log, version, effective date, revision date.
- Procedures lacked:
  - Operator specific practices and system characteristics.
  - Description of who, what, when, where, and how.
  - References to procedures in other manuals (O&M)
- Not considering failures without a release, e.g. overpressurization
- System subdivision was not sufficient to identify problems.



# Shortcomings Found in Plans

- Risk ranking did not include all risks to all facilities.
- Measures to reduce risk were too focused on pipe replacement rather than preventative measures designed to reduce risk.
- Each measure to reduce risk (or group of related measures) did not have a performance metric.
- Some plans contained a generic list of measures to reduce risk. The plan needs to include the specific measures the operator selected.











# DIMP Inspection Findings

- Plan development and implementation were required to be complete August 2, 2011
- PHMSA has conducted 2 DIMP inspections
- Some states have begun inspections
- What have key findings been?
- (Note: Discussion of comments/problems with inspection forms will be tomorrow)



# DIMP Inspection Findings (cont.)

- Findings from State Inspections include the following:
- Illinois has conducted 1 inspection
- Virginia has conducted 1 inspection
- South Dakota has conducted 4 inspections
- Oregon, Alabama, and Iowa report inspections begin in 2012
- NAPSIR questionnaire results for DIMP Inspections to be completed by October, 2011 indicated 20 DIMP inspections covering 33 operators will be completed by the end of October with 28 of 50 programs reporting





# DIMP Inspection Findings (cont.)

- Findings from Illinois DIMP inspection
  - Operator did not list operating environmental factors (business districts, paved area, hard to evacuate);
  - Did not address failures that do not result in leaks;
  - Need to specify how field discovery of inaccurate information is to be relayed to DIMP team and Plan;
  - Need reference to SharePoint site that houses missing information list;
  - Need listing of specific records used to identify threats;
  - Need to consider additional factors relating to Consequence of Failure when evaluating risk (hard to evacuate, etc);





# Findings from IL continued

- NGA/SGA program Consequence of Failure (“COF”) can be diluted by Frequency of Failure (“FOF”), needed larger range under COF;
- Must expand subdividing information to include additional criteria adopted since August 2<sup>nd</sup>, COF revisions;
- Reevaluation of threats time interval needed;
- Measures to reduce threats reevaluation time interval;
- Needs procedure for Annual Report data collection;
- Instruction to send annual report to ICC;
- How will superseded plans and back up data be kept;



# VA DIMP - General Findings

- DIMP Plan lacks adequate details
- Plan not VA specific
- Plan relies on “DIMP Council” and SMEs, but no selection process or criteria for these individuals is stated
- O&M Materials not adequately integrated or referenced
- In some cases, the link between assessed risk and Accelerated Actions not clear
- Operator’s plan lacks explanation of data validation process



# VA DIMP - Data and Model Issues

- Did not incorporate pipe replacement program in DIMP
- Validation of the risk ranking model not explained; “How do we know it’s working?”
- Model can only address mains; no risks specific to services
- Weight of consequence of failure (COF) is predetermined by vendor and method of determination is not explained in plan
- After the two highest risk projects, the model ranks replacements based on cost-effectiveness



# VA DIMP - Expectations

- File a Virginia specific plan by October 31<sup>st</sup>
- Take credit for the procedures already in place
- Add depth, explanations, and specificity to the plan
- State the processes used to justify the risk based decisions
- Consolidate and cleanse data sources
- Incorporate or reference other risk management tools in use to evaluate and address risks



# Expectation of an Operator Plan

- “Develop and Implement” the elements
  - “Implemented” means:
    - Completed risk evaluation
    - Identified measures to address risk
    - Allocated and scheduled resources
- Multi-state operators must create a risk ranking which
  - Encompasses all of an operator’s facilities
  - Is State specific and reviewable on a state-by-state basis
- Plan can apply to one or more states





# Knowledge Guidance

- “Reasonably available” information
  - Digging up pipe not required
  - Has impact on current pipe integrity
  - May be offsite warehouse
  - To demonstrate include a list of information sources used showing the title, date range (why selected), location
- Consider accuracy and completeness of facility location and material data
- Include a list of the data needed to fill gaps due to missing, inaccurate, or incomplete records
- Update recordkeeping procedures to include obtaining or correct missing or questionable data



# Knowledge Guidance

- “Environmental factors” refers to the operating environment (e.g. population density, landslide, corrosive soil, valve placement, etc.)
- Roles & responsibilities including titles or positions is useful
- Be sure to include farm taps in your plan



# Threat Identification Guidance

- Good practices that operators were performing:
  - Creating threat matrices
  - Summarizing trending of historical leaks and leak repairs
  - Distinguishing future “unknown” leaks eliminated by replacement
  - Trending “mean year of installation” – older pipe replacement.
  - Looking at rolling averages take out yearly anomalies.
  - Correlating system characteristics to failure rate.
- Geographic relationship of data is critical
- Identify failures without a release, e.g. overpressurization



# Threat Identification Guidance

- Potential threats are threats where the operator has not experienced a failure but they have conditions conducive to the threat (e.g. atm. corrosion, hurricanes, flooding)
- Examples operators considered:
  - Trenchless technology – unknowingly bored thru sewer or water lines
  - Future utility/road improvement projects
  - Discovery of a material not previously known to be in the system
  - Customers overbuilt on pipelines
  - Inside piping that no longer has adequate separation
- May need a procedure on how to handle a potential threat if it is encountered.





## Example Threats

- Pre-1940 oxy-acetylene girth welds of large diameter pipe
- Gas lines cross-bored through sewers
- Gophers eating small diameter plastic pipe
- Small systems exceeding MAOP during periods of low demand- now install secondary relief valve.
- High volume tapping tees failures. Performed root cause analysis and now prepare the surface differently, improved the installation tooling, and provided additional training to minimize human error.
- Flooding – increased stresses and damage to facilities – operator maintains a flood list. They performs flood surveys and shut-off impacted facilities under flood conditions.



# Risk Evaluation Guidance

- Understand how your risk model works. Each current and potential threat requires a consequence and likelihood weighting
- Subdivide facilities by measures to reduce risk; balance enough granularity with too much granularity to identify problems
- “Reasonable result” – is the ranking logical, justified through quantitative data, in agreement with SME validation?
- Multi-state operators should have a risk ranking for each State (either separately or be able to filter by State)



# Measures to Reduce Risk Guidance

- Risk reduction measures are more than a replacement program.
- Include all risk reduction measures required by the DIMP risk evaluation in your plan.
- Additional risk reduction measures you voluntarily perform may be included in their plan but are not required to be



# Example Measures to Reduce Risk

- Measures to reduce risk operators selected:
  - Hurricane Plans to shut in systems
  - Pot Holing every locate
  - Patrol and leak survey at more frequent than code
  - Monthly rectifier readings
  - Riser replacement programs
  - Cast iron surveys after earthquakes
  - Pipe replacement program





# **“Effective” Leak Management Guidance**

Effective Leak Management Program includes:

- Locate the leaks in the distribution system;
- Evaluate the actual or potential hazards associated with these leaks;
- Act appropriately to mitigate these hazards;
- Keep records; and
- Self-assess to determine if additional actions are necessary to keep people and property safe.













# Performance Measures Guidance

- Each measure or group of measures to reduce a risk needs a performance measure
- Establish a baseline for every performance measure
  - May only have one data point as the data will be collected going forward
  - Explain why that performance measure was chosen
  - Describe how the data is or will be collected





# Performance Measure Example

## **Threat:**

Other Outside Forces, Damage to above ground facilities by vehicles and vandalism.

## **Measures to Reduce Risk:**

- Idle riser program for monitoring and maintaining idle risers.
- High priority to meters at risk of future vehicular damage identification program. Work Request packets created and work prioritized for meters in vehicular zones.

## **Performance Measure:**

Track and monitor the frequency of failures due to vehicles in vehicular zones.



# Periodic Evaluation and Improvement Guidance

- What are possible program review triggers?
  - Completion of a measure to reduce risk
  - Completion of a replacement program
  - Leak rate are not decreasing
- Solely rerunning the risk model or reviewing the performance measure data does not constitute a review



# Periodic Evaluation & Improvement Guidance

What constitutes a program review?

- Review frequency of periodic evaluation, < 5 years
- Verify general information
- Incorporate new system information
- Re-evaluation of threats and risk
- Review the frequency of the measures to reduce risk
- Review the effectiveness of the measures to reduce risk
- Modify the measures to reduce risk and refine/improve as needed
- Review performance measures, refine/improve as needed



# Records Guidance

- Maintain records demonstrating compliance for 10 years
  - Includes records used for risk evaluation
  - For example, if 20 years of CP records were reviewed, maintain them for 10 additional years





# DIMP Website FAQ

**DIMP Home**

**DIMP Communications:  
Public Meetings,  
Webinars, Webcasts,  
and State Seminars**

**DIMP History**

**DIMP Resources**

**FAQs**

**Performance  
Measures**

**Questions and  
Comments for OPS**

**Regulator Contacts**



These Frequently Asked Questions (FAQs) are intended to clarify, explain, and promote better understanding of the integrity management rules. These FAQs are not substantive rules and do not create rights, assign duties, or impose new obligations. Requests for informal interpretations regarding the application of existing integrity management regulations and standards. Requests for informal interpretations regarding the application of pipeline integrity management rules to a specific situation may be submitted to PHMSA in accordance with 49 C.F.R. § 1.106.

The State-Federal DIMP Implementation Team was created to support improvements in the integrity of the Nation's pipeline systems through development of inspection methods and guidance for evaluation of an Operator's Distribution Integrity Management (DIM) system. Some material presented on this website was created by the team through a consensus process. States will implement their own individual state statutory authority in accordance with the applicable certification under 49 U.S.C. 60105 of this title and 49 U.S.C. 60106. States may establish their own procedures, inspection forms, and guidance in implementing the DIMP rule. If regulatory structures differ, operators should contact the regulatory authority exercising jurisdiction over their distribution system for more information.

Here you will find a listing of the most frequently asked questions (FAQs) related to the final rule. You may:

- browse the complete listing of FAQs below,
- [view](#) or [download](#) the entire set of FAQs in pdf format, or
- [view](#) or [download](#) the FAQs added/revised in the most recent FAQ revision.





# DIMP Website Resources

## DIMP Resources

### DIMP Inspection Forms

The State-Federal DIMP Implementation Team was created to support improvements in the integrity of the Nation's gas distribution pipeline systems through development of inspection methods and guidance for evaluation of an Operator's Distribution Integrity Management Program. The Team developed inspection forms for evaluation of an Operator's Distribution Integrity Management Program. States will implement the DIMP rule under their individual state statutory authority. Since State authority and regulatory structures differ, operators should contact the regulatory authority exercising jurisdiction over their distribution pipeline for more information. Two inspection forms were created:

1. [DIMP Inspection Form 192.1005 Operators\\_05.02.2011 in PDF](#) (All operators except master meter/small LPG operators)
2. [DIMP Inspection Form 192.1005 Operators\\_05.02.2011 in Word 2007](#) (All operators except master meter/small LPG operators)
3. [DIMP Inspection Form 192.1015 Operators\\_04.11.2011 in PDF](#) (Master meter/small LPG operators)
4. [DIMP Inspection Form 192.1015 Operators\\_04.11.2011 in Word 2007](#) (Master meter/small LPG operators)

### Technical Reports

The following reports are intended to serve as a technical resource for OPS and State pipeline safety inspectors evaluating operators' distribution integrity management (DIMP) programs.

- Mechanical Damage in Pipelines, Final Report, Michael Baker Jr., April 2009  
[Mechanical\\_Damage\\_Final\\_Report.pdf](#)
- Pipeline Corrosion, Final Report, Michael Baker Jr. Inc., November 2008
  - [Pipeline Corrosion Final Report](#)
  - [Pipeline Corrosion Poster](#)
- Damage Prevention Assistance Program (DPAP): Strengthening State Damage Prevention Programs (2008)  
[Strengthening\\_State\\_Damage\\_Prevention\\_Programs.pdf](#)

### Distribution Integrity Management: Guidance for Master Meter and Small Liquefied Petroleum Gas Pipeline Operators

This document provides guidance to help master meter operators and small LPG operators (i.e., those serving fewer than 100 customers from a single source) implement the requirements of subpart P of Part 192. Operators of larger distribution pipelines should refer to the Gas Piping Technology Committee (GPTC) guidelines.

[\[Guidance on Carrying Out Requirements in the Gas Distribution Integrity Management Rule \(2009\)\]](#)



## SHRIMP FAQ

(Q) Will my plan be in compliance if I use SHRIMP?

(A) Using SHRIMP does not necessarily mean that an operator will be in compliance with DIMP requirements. SHRIMP contains generic procedures. An operator's DIMP plan needs to reflect their own procedures, information sources, and practices. SIF is identifying areas where a SHRIMP user may need to enhance or modify the plan generated by this application to be in compliance. Refer to APGA SIF website for the latest information.



# The End!